QUARTERLY PROGRESS REPORT ON

METEOR AND COMET STUDIES

Period 1 April - 30 June 1965

By

Grady T. Hicks, Talbot A. Chubb
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INTRODUCTION

During this quarter we have accepted delivery of a television camera chain and have redesigned electronic circuits in the television cameras for better data recording and reduction.

EQUIPMENT

The Raytronics television camera chain has been rereceived, checked for specification compliance, and accepted. With the Bendix BX-7 chain this gives us two portable units, which could be set up as portable meteor observatories anywhere in the world.

The technique of recording meteors from the television monitor with time lapse photography has proven successful. With this technique, a 16 mm movie camera, whose shutter is operated with a solenoid, is used with a one-second exposure per frame to photograph the television monitor. During this one-second exposure, the televsion monitor is pulsed on and off five times in synchronism with the television camera tube. Therefore, a meteor trail shows time-breaks 1/5 second apart on each exposed frame. During this 1/5 second of time, the photodetector of the television camera tube is pulsed off and on at 1/60 second and 1/10 second with distinctively different pulses. Also at 1/2 second exposure time, the photodetector is pulsed differently. The reason for these different types

of pulses is to record accurately the time versus position of the meteor in its trajectory.

The main advantages of this system over conventional cinematography are that 24 times less film is used and therefore, 24 times less processing. In addition, the majority of meteor trails will be recorded on one frame which affords a much simpler data reduction procedure.

FUTURE PLANS

We will modify the BX-7 equipment to the time lapse procedure and convert the Auricon Movie Cameras (1200-foot-rolls of 16 mm film) to time lapse operation. Digital clocks both sidereal and solar rates are being constructed to provide an accurate real digital time for recording on each photograph. Signals from WWV will only be used to check the accuracy of WWV time. The two observatories should be in operation by early September.

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